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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/613,698 07/11/00 SCHWARTZ

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EXAMINER

IM22/0815

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NGUYEN, N

ART UNIT

PAPER NUMBER

1754

DATE MAILED:

08/15/01

**Please find below and/or attached an Office communication concerning this application or proceeding.**

**Commissioner of Patents and Trademarks**

## Office Action Summary

Application No.

09/613,698

Applicant(s)

SCHWARTZ

Examiner

N. M. NGUYEN

Group Art Unit

et al

—The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address—

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE three (3) MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

### Status

- ☐ Responsive to communication(s) filed on \_\_\_\_\_
- ☐ This action is **FINAL**.
- ☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 1 1; 453 O.G. 213.

### Disposition of Claims

- ☒ Claim(s) 1 is/are pending in the application.
- Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- ☒ Claim(s) 1 is/are rejected.
- ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- ☐ Claim(s) \_\_\_\_\_ are subject to restriction or election requirement.

### Application Papers

- ☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.
- ☐ The proposed drawing correction, filed on \_\_\_\_\_ is ☐ approved ☐ disapproved.
- ☐ The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner.
- ☐ The specification is objected to by the Examiner.
- ☐ The oath or declaration is objected to by the Examiner.

### Priority under 35 U.S.C. § 119 (a)-(d)

- ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
  - ☐ All ☐ Some\* ☐ None of the CERTIFIED copies of the priority documents have been received.
  - ☐ received in Application No. (Series Code/Serial Number) \_\_\_\_\_
  - ☐ received in this national stage application from the International Bureau (PCT Rule 1 7.2(a)).

\*Certified copies not received: \_\_\_\_\_

### Attachment(s)

- ☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 3
- ☒ Notice of Reference(s) Cited, PTO-892
- ☐ Notice of Draftsperson's Patent Drawing Review, PTO-948
- ☐ Interview Summary, PTO-413
- ☐ Notice of Informal Patent Application, PTO-152
- ☐ Other \_\_\_\_\_

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### DETAILED ACTION

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 1, under "a) forming a slurry comprising", "iv)", "v)" and "vi)" are listed, however, it is unclear if "I)" - "iii)" are missing.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371© of this title before the invention thereof by the applicant for patent.

Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Bergna (4,677,084) or Bergna (4,769,477).

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Bergna '084 or Bergna '477 discloses a process for producing a sufficiently stable slurry comprised of catalyst, catalyst precursor or catalyst support particles dispersed in a solution of a solute which consisting essentially of an oxide precursor, spray drying the slurry to form porous microspheres and calcining the spray dried microspheres. This process results in the formation of an oxide-rich layer at the periphery of each calcined microspheres (note column 7, lines 11-19). The catalyst, catalyst precursor or catalyst support particles used may be obtained by synthesis or by comminuting larger particles of crystalline, polycrystalline or mixed amorphous and crystalline phases. Examples of types of comminuted particles are those of the catalyst precursor of the V/P/O catalyst for known maleic anhydride processes, those of a multi component molybdate catalyst for known acrylonitrile processes, and those of the catalyst support alpha alumina (note column 7, lines 44-55). The solvent used in the slurry is a solvent for the oxide precursor. Water is preferred (note column 7, lines 63-64). The solute consists essentially of an oxide precursor of subcolloidal particle size. The solute particles must not aggregate, precipitate or gel during or following the formation of the solution or in contact with the catalyst, catalyst precursor or catalyst support particles. The solute particles must provide a sufficiency stable solution and slurry to permit spray drying. Because the solute particles with the above properties are much smaller than the voids and spaces between the catalyst, catalyst precursor or catalyst support particles, when the slurry is spray dried, the solute particles can flow with the solvent from the interior to the peripheral region of the porous microsphere formed by evaporation of the solvent in a droplet of the spray. These solute particles then remain in the peripheral region as the drying is

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completed and form a hard peripheral composite shell of catalyst, catalyst precursor or catalyst support particles and oxide. The oxide can be chosen from the group comprising  $\text{SiO}_2$ ,  $\text{Al}_2\text{O}_3$ ,  $\text{P}_2\text{O}_5$ ,  $\text{TiO}_2$ ,  $\text{ZrO}_2$ ,  $\text{MgO}$ ,  $\text{Cr}_2\text{O}_3$  and rare earth oxides. Examples of solutes for these oxides are silicic acid, basic aluminum chloride, phosphoric acid, titanyl oxychloride, hydrolyzed zirconyl nitrate, magnesium acetate, hydrolyzed basic chromic chloride and hydrolyzed basic nitrates of rare earth. The preferred oxide is  $\text{SiO}_2$  and the preferred solute or oxide precursor is silicic acid (note paragraph bridging columns 7-8).

Thus, Bergna '084 or Bergna '477 fairly teaches that the catalyst, catalyst precursor or catalyst support particles can be V/P/O catalyst (note column 7, lines 50-52) and the solute can be phosphoric acid (note column 8, lines 18-20). Since water is preferred as the solvent for the oxide precursor, when phosphoric acid is used, the phosphoric acid would be an aqueous phosphoric acid solution.

The process for making the catalyst in Bergna '804 or Bergna '477 anticipates the claimed process.

Claim 1 is rejected under 35 U.S.C. 102(e) as being anticipated by Contractor et al (6,107,238).

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Contractor '238 discloses an improved attrition resistant catalyst for the described two-step vapor phase oxidation processes. The catalyst has an oxide-rich surface layer and is made by a process comprising:

a) forming a slurry comprising;

i) catalyst, catalyst precursor or catalyst support particles,

ii) a colloidal oxide sol wherein oxide particles in the sol having an average size between 10 and 100 nm; and,

iii) a solution of a solvent and solute wherein the solute consist essentially of a precursor of said oxide-rich surface with particle size no greater than 5 nm; and wherein 25% to 50% of the total dry catalyst weight is from the colloidal oxide sol (ii), 5% to 15% of the total dry catalyst weight is from the soluble oxide precursor (iii), and the remainder is from the catalyst, catalyst precursor or catalyst support particles (I);

b) spray drying the slurry from step (a) to form porous microspheres of attrition resistant catalyst; and,

c) calcining the spray dried microspheres of step (b) at an elevated temperature which is below the temperature which is substantially deleterious to the catalyst, catalyst precursor or catalyst support particles.

The catalyst or catalyst precursor is preferred to be vanadium, vanadium-phosphorus, multimetal molybdenum-vanadium and other vanadium-containing catalysts (note column 5, lines 41-44). The solvent used in the slurry to be spray dried is a solvent for the oxide precursor.

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Water is preferred (note column 5, lines 66-67). The solutes can be silicic acid, basic aluminum chloride, phosphoric acid, etc. (Note column 6, lines 18-25.

Contractor '238 fairly discloses, with sufficient specificity, a catalyst with vanadium-phosphorus for "I)", a colloidal oxide sol for "ii)" (which is the same as "vi)" as required in the instant claim), and water as an solvent with phosphorus acid as a solute.

The process of Contractor '238 anticipates the claimed process.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bergna '477.

Bergna '084 or Bergna '477 discloses a process for making a catalyst with high attrition resistance as stated in the above rejection.

For the "optionally" limitation, the subject matter as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made to have use a mixture of phosphoric acid and silicic acid as the solute, because combining two or more materials disclosed by the prior art for the same purpose to form a third material that is to be used for the same purpose has been held to be prima facie case of obviousness, In re Kerkhoven, 205 USPQ 1069.

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Claim 1 rejected under 35 U.S.C. 103(a) as being unpatentable over Contractor '238.

Contractor '238 discloses a process for making a catalyst as stated above.

In the event that the number of solute disclosed in Contractor '238 is too large for anticipation, It would have been obvious to one skilled in the art to select any combination among the specifically disclosed compounds, Merck & Co. Inc. v. Biocraft Laboratory Inc. 10 USPQ 1846.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Ngoc-Yen Nguyen whose telephone number is (703) 308-2536. The examiner is currently on a part time schedule.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Steve Griffin, can be reached on (703) 308-1164. The fax phone number for this Group is (703) 872-9311 (for OFFICIAL After Final amendment only) or (703) 872-9310 (for all other OFFICIAL faxes). UNOFFICIAL fax can be sent to (703) 305-6078.




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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0661.

N. M. Nguyen  
August 12, 2001



N. M. Nguyen  
Primary Examiner  
Art Unit 1754